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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

NOTE, JANIS L

ART UNIT	PAPER NUMBER
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1756

19

DATE MAILED: 12/04/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/679,480

Applicant(s)

SUZUKI et al

Examiner

J. DOTE

Group Art Unit

1756

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- ☒ Responsive to communication(s) filed on 7/8/02
- ☐ This action is **FINAL**.
- ☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- ☒ Claim(s) 1, 3-7, 10, 11, 13-17, 20, 22-26, 29, 31-35 is/are pending in the application.
- Of the above claim(s) _____ is/are withdrawn from consideration.
- ☐ Claim(s) _____ is/are allowed.
- ☒ Claim(s) 1, 3-7, 10, 11, 13-17, 20, 22-26, 29, 31-35 is/are rejected.
- ☐ Claim(s) _____ is/are objected to.
- ☐ Claim(s) _____ are subject to restriction or election requirement

Application Papers

- ☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
- ☐ The drawing(s) filed on _____ is/are objected to by the Examiner
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

- ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119 (a)-(d).
- ☒ All ☐ Some* ☐ None of the:
- ☒ Certified copies of the priority documents have been received.
- ☐ Certified copies of the priority documents have been received in Application No. _____.
- ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a))

*Certified copies not received: _____

Attachment(s)

- ☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____
- ☒ Notice of Reference(s) Cited, PTO-892
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Interview Summary, PTO-413
- ☐ Notice of Informal Patent Application, PTO-152
- ☐ Other _____

Office Action Summary

1. A request for continued examination under 37 CFR 1.114 was filed in this application after appeal to the Board of Patent Appeals and Interferences, but prior to a decision on the appeal. Since this application is eligible for continued examination under 37 CFR 1.114 and the fee set forth in 37 CFR 1.17(e) has been timely paid, the appeal has been withdrawn pursuant to 37 CFR 1.114 and prosecution in this application has been reopened pursuant to 37 CFR 1.114. Applicant's submission filed on Jul. 8, 2002, has been entered.

2. All claims are drawn to the same invention claimed in the application prior to the entry of the submission under 37 CFR 1.114. Claims 1, 3-7, 10, 11, 13-17, 20, 22-26, 29, and 31-35 are pending.

3. As noted in the Advisory action mailed Apr. 18, 2002, Paper No. 12, the terminal disclaimer filed in Paper No. 11 on Apr. 8, 2002, disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of US 6,136,483 (Suzuki'483) has been reviewed and is accepted. The terminal disclaimer has been recorded.

Accordingly, the obviousness-type double patenting rejections of claims over U.S. Patent No. 6,136,483 (Suzuki'483) in view of the other cited references, set forth in the office

action mailed Jan. 8, 2002 in Paper No. 9, paragraphs 9-11, have been withdrawn.

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f), or (g) prior art under 35 U.S.C. 103(a).

6. Claims 1, 3, 5, 10, 11, 13, 15, 29, 31, and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent 09-127711 (JP'711) combined with Japanese Patent 07-295250 (JP'250). See the DERWENT machine-assisted translations of JP'711 and JP'250 for cites.

JP'711 discloses an electrophotographic photoreceptor comprising a conductive substrate, a charge generation layer, and a charge transport layer. The charge generation layer comprises 10 parts by weight of an oxy-titanium phthalocyanine pigment and 5 parts by weight of an asymmetric bisazo pigment that meets the limitations of formula (I) recited in instant claim 1.

Translation, photoconductor B, paragraphs 0031-0033 and 0035-0038. The weight ratio of phthalocyanine pigment to bisazo pigment is 2:1, which is within the range of 1:5 to 5:1 recited in instant claim 3. JP'711 further discloses that the phthalocyanine pigment can be preferably a X-form metal-free phthalocyanine or a τ -form metal-free phthalocyanine pigment, both of which meet the phthalocyanine compositional limitation recited in instant claim 5. Translation, paragraph 0015. JP'711 discloses that its photoreceptor comprising a X-form or τ -form metal-free phthalocyanine pigment and a bisazo pigment has photographic sensitivity to long wavelength light, and can be fully charged from the "first rotation." Translation, paragraph 0011.

JP'711 further discloses that its photoreceptor can be used in an electrophotographic image forming apparatus that meets the other components recited in instant claims 10, 11, 13, and 15. Translation, paragraphs 0029 and 0043. JP'711 also discloses that its photoreceptor can be used in a reversal development

image forming method that meets the steps recited in instant claims 29, 31, and 33. Translation, paragraphs 0029 and 0043.

JP'711 does not disclose that the charge transport layer comprises a sulfur-containing compound as recited in the instant claims. However, JP'711 discloses that the charge transport layer can comprise any well-known antioxidant. Translation, paragraph 0027.

JP'250 discloses sulfur-containing compounds that meet the compositional limitations of formulas (III), (S-1), (S-2), and (S-3) recited in the instant claims. JP'250 discloses that said sulfur-containing compounds can be used as antioxidants in charge transport layers of photoreceptors. Translation, paragraph 0007, compounds (I-1) to (I-4) at paragraph 0026, compounds (II-1) to (II-3) at paragraph 0028. JP'250 discloses that said sulfur-containing compounds prevent the deterioration of the photoreceptor due to ozone in the ambient air or due to strong light irradiation. The photoreceptor has improved potential stability over long periods of time. Translation, paragraphs 0003, 0006-0007, and paragraph 0054, lines 1-4. JP'250 further teaches that its sulfur-containing antioxidants provide photoreceptors with improved stability of electrification and sensitivity over long periods of time compared to known hindered phenol antioxidants. DERWENT translation, Table 1, comparative examples 3 and 4, and paragraph 0054, lines 14-18.

It would have been obvious for a person having ordinary skill in the art to use JP'250's sulfur-containing compound that meets the compositional limitation of formulas (III), (S-1), (S-2), or (S-3) recited in the instant claims, as the antioxidant in the charge transport layer in the photoreceptor disclosed by JP'711, because that person would have had a reasonable expectation of successfully obtaining a photoreceptor that has improved potential stability over long periods of time, thereby providing an electrophotographic imaging apparatus and imaging method that provide stable toner images after many repeated copies.

7. Claims 20, 22, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP'711 combined with JP'250, as applied to claims 1, 3, 5, 10, 11, 13, and 15 above, further combined with US 5,047,803 (Kanoto). See the DERWENT machine-assisted translations of JP'711 and JP'250 for cites.

JP'711 combined with JP'250 renders obvious an electrophotographic photoreceptor and an electrophotographic imaging apparatus as described in paragraph 6 above, which is incorporated herein by reference.

JP'711 does not disclose that the electrophotographic photoreceptor can be used in a process cartridge as recited in the instant claims.

However, the use of process cartridges in electrophotographic apparatuses are well-known in the art. Kanoto discloses that process cartridges in electrophotographic apparatuses are well-known in the art. Kanoto discloses that process cartridges comprising an electrophotographic photoreceptor and at least one processing means, such as a contact roller charger or corona charger, a developing device, a cleaner, and other elements are widely used in the field of image forming apparatuses that are small and that do not require maintenance. Col. 1, lines 18-28, and col. 3, lines 36-38. Kanoto discloses an imaging forming apparatus comprising a process cartridge that is easily dismounted from the main assembly of the image forming apparatus. Col. 1, lines 60-63. Kanoto shows an example of such an apparatus in Fig. 1. The apparatus comprises a process cartridge 100, a laser beam scanner 7 as the image-wise exposure source, an image transfer roller 8 to transfer the toned image from the photoreceptor to a receiving member, and a pair of fixing rollers 15a and 15b to fix the toned image on the receiving member. The process cartridge 100 comprises a photosensitive drum 1 (i.e., photoreceptor), a charging roller 2, a developing device 3, and a cleaning device 4 to remove residual toner or other contaminants from the photoreceptor after development. See Fig. 1, and col. 2, line 37, to col. 4,

line 38. Kanoto discloses that the charging roller 2, the developing device 3, or the cleaning device 4 need not be contained in the process cartridge 100, but can be part of the image forming apparatus. Col. 2, lines 57-60. Kanoto further discloses that the developing device 3 in the process cartridge or image forming apparatus can reverse develop the electrostatic latent image formed on the photoreceptor with a developer having the same polarity as the charge remaining on the photoreceptor. Col. 3, lines 57-61.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Kanoto, to incorporate the electrophotographic photoreceptor rendered obvious over the combined teachings of JP'711 and JP'250 in Kanoto's detachable process cartridge in its image forming apparatus, because that person would have had reasonable expectation of successfully obtaining an image forming apparatus comprising an easily detachable process cartridge having the benefits of being small and free from maintenance, and having the benefits disclosed by JP'711 and JP'250.

8. Claims 6, 16, and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP'711 combined with JP'250, as applied to claims 5, 15, and 33 above, further combined with US 4,507,374

(Kakuta) and DERWENT abstract Acc. No. 1983-816039. See the DERWENT machine-assisted translations of JP'711 and JP'250 for cites.

JP'711 combined with JP'250 renders obvious a photoreceptor, an electrophotographic imaging apparatus, and a reversal developing imaging method as described in paragraph 6 above, which is incorporated herein by reference.

As set forth in paragraph 6, JP'711 discloses that the phthalocyanine pigment can be preferably a τ -form metal-free phthalocyanine. Translation, paragraph 0015. JP'711 discloses that its photoreceptor comprising a τ -form metal-free phthalocyanine pigment and a bisazo pigment has photographic sensitivity to long wavelength light, and can be fully charged from the "first rotation." Translation, paragraph 0011. JP'711 does not disclose that the τ -form metal-free phthalocyanine pigment has the X-ray diffraction pattern recited in the instant claims.

Kakuta discloses a τ -form metal-free phthalocyanine pigment having a X-ray diffraction pattern with characteristic Bragg angles ($2\theta \pm 0.2^\circ$) of 7.6, 9.2, 16.8, 17.4, 20.4, and 20.9. Col. 2, lines 16-19, col. 4, lines 38-42, 53-55, and Fig. 4. Kakuta discloses that photoreceptors comprising said phthalocyanine exhibits high sensitivities to longer wavelength light. Col. 1, lines 58-63. Kakuta discloses that said

phthalocyanine exhibits a maximum sensitivity at 790-810 nm, and is most useful in photoconductors image-wise exposed to a semiconductor laser. Col. 9, lines 38-41.

Kakuta does not disclose that the X-ray diffraction pattern of his τ -form metal-free phthalocyanine exhibits Bragg angles of 21.7° and 27.6° as recited in the instant claims. However, the instant specification discloses that the τ -form metal-free phthalocyanine having the X-ray diffraction pattern recited in the instant claims can be prepared by a method described in Japanese Patent 58-182639 (JP'639). Specification, page 21, lines 11-19. Kakuta is the US equivalent of JP'639. See the DERWENT abstract Acc. No. 1983-816039. Because all six Bragg angles disclosed by Kakuta correspond to Bragg angles recited in the instant claims, and because Kakuta's τ -form metal-free phthalocyanine is obtained by a method that makes a τ -form metal-free phthalocyanine having the X-ray diffraction pattern recited in the instant claims, it is reasonable to presume that Kakuta's τ -form metal-free phthalocyanine has a X-ray diffraction pattern that meets the limitation recited in the instant claims. The burden is on applicants to prove otherwise. In re Fitzgerald, 205 USPQ 594 (CCPA 1980).

It would have been obvious for a person having ordinary skill in the art to use Kakuta's τ -form metal-free phthalocyanine pigment as the metal-free phthalocyanine in the photoreceptor

rendered obvious over the combined teachings of JP'711 and JP'250, because that person would have had a reasonable expectation of successfully obtaining a photoreceptor having improved sensitivity to the longer wavelength region, thereby providing an electrophotographic imaging apparatus and a reversal development imaging method that provide good toner images as taught by JP'711 and JP'250.

9. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP'711 combined with JP'250 and Kanoto, as applied to claim 24 above, further combined with Kakuta and DERWENT abstract Acc. No. 1983-816039. See the DERWENT machine-assisted translations of JP'711 and JP'250 for cites.

JP'711 combined with JP'250 and Kanoto renders obvious a process cartridge as described in paragraph 7 above, which is incorporated herein by reference.

JP'711 discloses that the phthalocyanine pigment can be preferably a τ -form metal-free phthalocyanine. JP'711 does not disclose that the τ -form metal-free phthalocyanine pigment has the X-ray diffraction pattern recited in the instant claims. However, Kakuta discloses a τ -form metal-free phthalocyanine pigment that appears to have a X-ray diffraction pattern that meets the limitations recited in the instant claims. The

discussions of JP'711 and Kakuta in paragraph 8, supra, are incorporated herein by reference.

It would have been obvious for a person having ordinary skill in the art to use Kakuta's π -form metal-free phthalocyanine pigment as the metal-free phthalocyanine in the photoreceptor rendered obvious over the combined teachings of JP'711 and JP'250, and to use said photoreceptor in the apparatus disclosed by Kanoto, because that person would have had a reasonable expectation of successfully obtaining a photoreceptor having improved sensitivity to the longer wavelength region, thereby providing an electrophotographic imaging apparatus comprising an easily detachable process cartridge that provide good toner images as taught by JP'711 and JP'250.

10. Claims 7, 17, and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP'711 combined with JP'250, as applied to claims 5, 15, and 33 above, further combined with US 3,357,989 (Byrne). See the DERWENT machine-assisted translations of JP'711 and JP'250 for cites.

JP'711 combined with JP'250 renders obvious a photoreceptor, an electrophotographic imaging apparatus and a reversal developing imaging method as described in paragraph 6 above, which is incorporated herein by reference.

As set forth in paragraph 6, supra, JP'711 discloses that the phthalocyanine pigment can be preferably a X-form metal-free phthalocyanine. Translation, paragraph 0015. JP'711 discloses that its photoreceptor comprising a X-form metal-free phthalocyanine pigment and a bisazo pigment has photographic sensitivity to long wavelength light, and can be fully charged from the "first rotation." Translation, paragraph 0011. JP'711 discloses that a X-form metal-free phthalocyanine has especially high photographic sensitivity. Translation, paragraph 0015. JP'711 does not disclose that the X-form metal-free phthalocyanine pigment has the X-ray diffraction pattern recited in the instant claims.

However, a X-form metal-free phthalocyanine pigment having a X-ray diffraction pattern recited in the instant claims is well-known in the art, as shown by Byrne. Byrne discloses a X-form metal-free phthalocyanine pigment having a X-ray diffraction pattern that meets the limitations recited in the instant claims. See Fig. 1, and col. 2, lines 50-54, col. 5, lines 14-22, and reference claim 1. Byrne's phthalocyanine has photosensitivity to the wavelength region of greater than 700 nm. See Fig. 2. Byrne discloses that his phthalocyanine is especially useful as a photoconductive material in electrophotography, and that it provides "surprisingly high photosensitivity." Col. 2, lines 3-9.

It would have been obvious for a person having ordinary skill in the art to use Byrne's X-form metal-free phthalocyanine pigment having a X-ray diffraction pattern that meets the limitation of the instant claims as the metal-free phthalocyanine in the photoreceptor rendered obvious over the combined teachings of JP'711 and JP'250, because that person would have had a reasonable expectation of successfully obtaining a photoreceptor having improved sensitivity to the longer wavelength region, thereby providing an electrophotographic imaging apparatus and a reversal development imaging method that provide good toner images as taught by JP'711 and JP'250.

11. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP'711 combined with JP'250, and Kanoto, as applied to claim 24 above, further combined with Byrne. See the DERWENT machine-assisted translations of JP'711 and JP'250 for cites.

JP'711 combined with JP'250 and Kanoto renders obvious a process cartridge as described in paragraph 7 above, which is incorporated herein by reference.

JP'711 does not disclose that the X-form metal-free phthalocyanine pigment has the X-ray diffraction pattern recited in the instant claims. However, a X-form metal-free phthalocyanine pigment having a X-ray diffraction pattern recited

in the instant claims is well-known in the art, as shown by Byrne. The discussions of JP'711 and Byrne in paragraph 10, supra, are incorporated herein by reference.

It would have been obvious for a person having ordinary skill in the art to use Byrne's X-form metal-free phthalocyanine pigment having a X-ray diffraction pattern that meets the limitation of the instant claims as the metal-free phthalocyanine in the photoreceptor rendered obvious over the combined disclosures JP'711 and JP'250, and to use said photoreceptor in the apparatus disclosed by Kanoto, because that person would have had a reasonable expectation of successfully obtaining a photoreceptor having improved sensitivity to the longer wavelength region, thereby providing an electrophotographic imaging apparatus comprising an easily detachable process cartridge that provides good toner images as taught by JP'711 and JP'250.

12. Applicants' arguments filed in the amendment filed after the final rejection in Paper No. 10 on Apr. 8, 2002, with respect to the rejections over JP'711 combined with JP'250 set forth in paragraphs 6 -11, supra, have been fully considered but they are not persuasive.

(1) Applicants argue that neither JP'711 nor JP'250 recognize the significant improvements in the reduction of black

spots obtained by the combination of the particular asymmetric bisazo pigment and particular organic sulfur compounds recited in the instant claims as noted by applicants.

However, as previously noted in Paper No. 9, paragraph 12, item (1), the reasons to combine the references do not have to be applicants' reasons. (The examiner did not state that the benefit sought by applicants, the reduction in the occurrence of black spots, was expected from the teachings in JP'250, as alleged by applicants in Paper No. 10.) As discussed in the above rejection and admitted by applicants in Paper No. 10, page 2, lines 15-20, JP'250 provides ample reasons to use its sulfur-containing antioxidant in the charge transport layer of JP'711's photoconductor B.

Accordingly, the instant claimed invention is prima facie obvious over combined teachings of JP'711 and JP'250.

(2) Applicants further argue that any prima facie obviousness is rebutted by the evidence provided in the instant specification.

The evidence in the present record does not show that the instantly claimed invention yields unexpected results over the prior art of JP'711 for the following reasons:

(1) The showing in the specification is not commensurate in scope with the instant claims. The instant specification exemplifies preferred photoreceptors comprising: (a) an aluminum

drum having a diameter of 30 mm; (b) an undercoat layer having a thickness of 3.0 μm ; (c) a charge generation layer comprising preferred asymmetric bisazo pigment (VII) or (VIII) (see instant claims 4, 14, 23, and 33) and a π -form metal-free phthalocyanine or a X-form phthalocyanine; and (d) a charge transfer layer comprising a particular triarylamine compound and sulfur-containing compound of formula III, S-1, S-2, or S-3. See Table 14, instant examples 5-16.

In view of the showing in Rule 132 declaration executed by Yasuo Suzuki on Jul. 4, 2002, filed in Paper No. 14 on Jul 8, 2002, both the diameter of the photoreceptor drum and the thickness of the undercoat layer appear to be critical elements in the formation of images free from black spots. The declarant attributes the differences in black spot formation between comparative examples 5 and 13 of the instant specification (black spots observed after the 38,000th image) and Suzuki'483's examples 8 and 15 (no black spots observed after the 50,000th image) to:

- The differences in the thickness in the undercoat layer.

The declarant states that "the underlayer layer, which is thicker in the Suzuki Examples (4.5 μm) than in the present Comparative Examples (3.0 μm), has a charge blocking property." The declarant further states that "the thicker underlayer, the better the black spot formation."

(2) The differences in the photoreceptor drum diameter. The declarant states that "when Suzuki's photoreceptor (having a diameter of 80 mm) produces 50,000 images [on A-4 paper], it revolves about 53,742 times," while the "photoreceptor used in the present application revolves about 143,312 times to produce 50,000 images [on A-4 paper], because it has a diameter of 30 mm." The declarant further states that the "surface of the photoreceptor having a diameter of 30 mm is exposed to hazards by a factor of 2.67 times greater than that of the Suzuki photoreceptor having a diameter of 80 mm." The declarant states that "when black spots are observed after the 38,000th image in the Comparative Examples of the present application, it is nearly equivalent to black spots being observed from about the 100,000th image in the Suzuki Examples."

Thus, both the diameter of the photoreceptor drum and the thickness of the underlayer appear to be critical elements to formation of black spots. The instant claims do not recite these critical elements.

Given the welter of unconstrained variables, it is not clear whether the "unexpected" result in image black spot formation is due to solely to the addition of the particular sulfur-containing antioxidant, or due to the combination of the sulfur-containing antioxidant with either the preferred asymmetric bisazo pigment or the critical elements, or both.

(2) The showing in the specification does not compare to the closest prior art of JP'711. JP'711 exemplifies a photoreceptor comprising: (a) an aluminum drum having a diameter of 65 μm ; (b) a sealed anodized layer having a thickness of 6 μm ; (c) a charge generating layer comprising a titanyl phthalocyanine and its particular asymmetric bisazo compound 6; and (d) a charge transport layer. JP'711's bisazo compound 6 is within the broad formula (I) recited in instant claims 1, 10, 20, and 39, but outside the scope of the preferred bisazo recited in instant claims 4, 13, 23, and 32. The comparative examples in the instant specification do not exemplify such a photoreceptor. Furthermore, as discussed, supra, the diameter of the drum and the thickness of the underlayer appear to be critical elements in the formation of images free from black spots. Accordingly, the comparative examples in the instant specification are not probative comparisons to JP'711.

The rejections over the combined teachings of JP'711 and JP'250 stand.

13. Claims 1 and 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent 8-029998 (JP'998) combined with JP'250. See the Japanese Patent Office (JPO) machine translation of JP'998 and the DERWENT machine-assisted translation of JP'250 for cites.

JP'998 discloses an electrophotographic photoreceptor comprising a conductive substrate, a charge generation layer, and a charge transport layer. The charge generation layer comprises 3 parts by weight of a π -form metal-free phthalocyanine pigment and 6 parts by weight of an asymmetric bisazo pigment that meets the limitations of formula (II) recited in instant claim 4. Translation, example 1, paragraph 0035. The weight ratio of phthalocyanine pigment to bisazo pigment is 1:2, which is within the range of 1:5 to 5:1 recited in instant claim 3. JP'998 discloses that its photoreceptor has high spectral sensitivity in the visible light to the near infrared region. JPO translation, paragraph 0004.

JP'998 does not disclose that the charge transport layer comprises a sulfur-containing compound as recited in the instant claims. However, JP'998 discloses that the charge transport layer can comprise an antioxidant. Translation, paragraph 0027.

JP'250 discloses sulfur-containing compounds that meet the limitation of formulas (III), (S-1), (S-2), and (S-3) recited in the instant claims. JP'250 discloses that said sulfur-containing compounds can be used as antioxidants in charge transport layers of photoreceptors. The discussion of JP'250 in paragraph 6, supra, is incorporated herein by reference.

It would have been obvious for a person having ordinary skill in the art to use JP'250's sulfur-containing compound that

meets the compositional limitation of formulas (III), (S-1), (S-2), or (S-3) recited in the instant claims, as the antioxidant in the charge transport layer in the photoreceptor disclosed by JP'998, because that person would have had a reasonable expectation of successfully obtaining a photoreceptor that has improved potential stability over long periods of time and provides stable toner images after many repeated copies.

14. Claims 10, 11, 13-15, 20, 22-24, 29, and 31-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP'998 combined with JP'250, as applied to claims 1 and 3-5 above, further combined with Kanoto. See the JPO translation of JP'998 and the DERWENT machine-assisted translation of JP'250 for cites.

JP'998 combined with JP'250 renders obvious an electrophotographic photoreceptor as described in paragraph 13 above, which is incorporated herein by reference.

JP'998 does not disclose that the electrophotographic photoreceptor can be used in a process cartridge or an apparatus as recited in the instant claims. Nor does JP'998 disclose that its photoreceptor can be used in the imaging forming method recited in the instant claims.

However, the use of process cartridges in electrophotographic apparatuses are well-known in the art. Kanoto discloses an image forming apparatus comprising a readily detachable

process cartridge. The apparatus and process cartridge meet the structural limitations recited in instant claims 10, 11, and 20, but for the particular photoreceptor. The discussion of Kanoto in paragraph 7 above is incorporated herein by reference. Kanoto further discloses that its imaging apparatus performs an image forming process that meets the process steps recited in instant claim 29, but for the step of the providing the particular photoreceptor. Kanoto, col. 3, line 49, to col. 4, line 38.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Kanoto, to incorporate the electrophotographic photoreceptor rendered obvious over the combined teachings of JP'998 and JP'250 in Kanoto's detachable process cartridge in its image forming apparatus, because that person would have had reasonable expectation of successfully obtaining a reversal development imaging method and an image forming apparatus comprising an easily detachable process cartridge having the benefits of being small and free from maintenance that provide stable toner images after many repeated runs as disclosed by JP'250.

15. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP'998 combined with JP'250, as applied to claim 5 above, further combined with Kakuta and DERWENT abstract

Acc. No. 1983-816039. See the JPO translation of JP'998 and the DERWENT machine-assisted translation of JP'250 for cites.

JP'998 combined with JP'250 renders obvious a photoreceptor as described in paragraph 13 above, which is incorporated herein by reference.

As set forth in paragraph 13, supra, JP'998 discloses that the phthalocyanine pigment is a τ -form metal-free phthalocyanine. However, JP'998 does not disclose that the τ -form metal-free phthalocyanine pigment has the X-ray diffraction pattern recited in the instant claims.

Kakuta discloses a τ -form metal-free phthalocyanine pigment having a X-ray diffraction pattern with characteristic Bragg angles ($2\theta \pm 0.2^\circ$) of 7.6, 9.2, 16.8, 17.4, 20.4, and 20.9. The discussion of Kakuta in paragraph 8 above is incorporated herein by reference.

It would have been obvious for a person having ordinary skill in the art to use Kakuta's τ -form metal-free phthalocyanine pigment as the τ -form metal-free phthalocyanine in the photoreceptor rendered obvious over the combined teachings of JP'998 and JP'250, because that person would have had a reasonable expectation of successfully obtaining a photoreceptor having improved sensitivity to the longer wavelength region, and having the benefits disclosed by JP'998 and JP'250.

16. Claim 16, 25, and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP'998 combined with JP'250 and Kanoto, as applied to claim 15, 24, and 33 above, further combined with Kakuta and DERWENT abstract Acc. No. 1983-816039. See the JPO translation of JP'998 and the DERWENT machine-assisted translations of JP'250 for cites.

JP'998 combined with JP'250 and Kanoto renders obvious an imaging apparatus comprising a process cartridge and an image forming method as described in paragraph 14 above, which is incorporated herein by reference.

JP'998 discloses that the phthalocyanine pigment is a τ -form metal-free phthalocyanine. JP'998 does not disclose that the τ -form metal-free phthalocyanine pigment has the X-ray diffraction pattern recited in the instant claims. However, Kakuta discloses a τ -form metal-free phthalocyanine pigment that appears to have a X-ray diffraction pattern that meets the limitations recited in the instant claims. The discussion of Kakuta in paragraph 8, supra, is incorporated herein by reference.

It would have been obvious for a person having ordinary skill in the art to use Kakuta's τ -form metal-free phthalocyanine pigment as the τ -form metal-free phthalocyanine in the photoreceptor rendered obvious over the combined teachings of JP'998 and JP'250, and to use said photoreceptor in the apparatus

disclosed by Kanoto, because that person would have had a reasonable expectation of successfully obtaining a photoreceptor having improved sensitivity to the longer wavelength region, thereby providing an electrophotographic image forming apparatus comprising an easily detachable process cartridge and a reversal development imaging method that provide good toner images as taught by JP'250.

17. Claims 1, 4, and 5 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-3, 6, and 21-24 of copending Application No. 08/550,808 (Application'808) in view of JP'250. See the DERWENT machine-assisted translation of JP'250 for cites.

Application'808 claims an electrophotographic photoreceptor that meets the limitations recited in the instant claims, but for the organic sulfur-containing compound recited in the instant claims. The photoreceptor comprises a conductive substrate, a charge generation layer, and a charge transport layer. See reference claims 2, 22, and 24. The charge generation layer comprises an asymmetric bisazo pigment that meets the limitations of formula (II) recited in instant claim 4 and a π -type metal-free phthalocyanine pigment that meets the limitation recited in instant claim 5. See reference claims 1 and 3.

As discussed supra, the reference claims do not recite that the charge transport layer comprises a sulfur-containing compound as recited in the instant claims.

JP'250 discloses sulfur-containing compounds that meet the limitations of formulas (III), (S-1), (S-2), or (S-3) recited in the instant claims. JP'250 discloses that said sulfur-containing compounds can be used as antioxidants in charge transport layers of photoreceptors. The discussion of JP'250 in paragraph 6, supra, is incorporated herein by reference.

It would have been obvious to a person having ordinary skill in the art to use JP'250's sulfur-containing compound that meets the limitation of formulas (III), (S-1), (S-2) or (S-3) recited in the instant claims as the antioxidant in the charge transport layer in the photoreceptor recited in the claims of Application'808, because that person would have had a reasonable expectation of successfully obtaining a photoreceptor that has improved potential stability over long periods of time.

18. Claims 10, 11, 14, 15, 20, 23, 24, 29, 32, and 33 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 4, 6, and 21-24 of copending Application'808 in view of JP'250, further in view of Kanoto. See the DERWENT machine-assisted translation of JP'250 for cites.

The subject matter recited in the claims of Application'808 in view of JP'250 renders obvious an electrophotographic photoreceptor as described in paragraph 17 above, which is incorporated herein by reference.

Application'808 does not claim a process cartridge or an apparatus as recited in instant claims 20 and 10, respectively. Nor does Application'808 claim an image forming method comprising a reversal developing step as recited in instant claim 29.

However, the use of process cartridges in electrophotographic apparatuses are well-known in the art. Kanoto discloses an imaging apparatus comprising a readily detachable process cartridge, which both meet the structural limitations recited in instant claims 10, 11, and 20, but for the particular photoreceptor. The discussion of Kanoto in paragraph 7 above is incorporated herein by reference. Kanoto further discloses that its imaging apparatus performs an imaging forming process that meets the process steps recited in instant claim 29, but for the step of the providing the particular photoreceptor. Kanoto, col. 3, line 49, to col. 4, line 38.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Kanoto, to incorporate the electrophotographic photoreceptor rendered obvious over the subject matter recited in the claims of Application'808 combined with the teachings in JP'250 in Kanoto's

detachable process cartridge in his image forming apparatus because person would have had reasonable expectation of successfully obtaining a reversal development imaging method and an image forming apparatus comprising an easily detachable process cartridge having the benefits of being small and free from maintenance that provide stable toner images after many repeated runs as disclosed by JP'250.

19. Claim 6 is provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 4, 6, and 21-24 of Application'808 in view of JP'250, further in view of Kakuta and DERWENT abstract Acc. No. 1983-816039. See the DERWENT machine-assisted translation of JP'250 for cites.

The subject matter recited in the claims of Application'808 in view of JP'250 renders obvious an electrophotographic photoreceptor as described in paragraph 17 above, which is incorporated herein by reference.

Application'808 claims do not recite that the π -form metal-free phthalocyanine recited in the reference claims has the X-ray diffraction pattern recited in instant claim 6. However, Kakuta discloses a π -form metal-free phthalocyanine that appears to have a X-ray diffraction pattern as recited in the instant claims.

The discussion of Kakuta in paragraph 8, supra, is incorporated herein by reference.

It would have been obvious for a person having ordinary skill in the art to use Kakuta's π -form metal-free phthalocyanine pigment as the metal-free phthalocyanine in the photoreceptor rendered obvious over the subject matter recited in Application'808 combined with teachings of JP'250, because that person would have had a reasonable expectation of successfully obtaining a photoreceptor having improved sensitivity to the longer wavelength region, and having the benefits disclosed by JP'250.

20. Claims 16, 25, and 34 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 4, 6, and 21-24 of copending Application'808) in view of JP'250 and Kanoto, further in view of Kakuta and DERWENT abstract Acc. No. 1983-816039. See the DERWENT machine-assisted translation of JP'250 for cites.

The subject matter recited in the claims of Application'808 in view of JP'250 and Kanoto renders obvious an process cartridge, an apparatus, and a method of forming an image as described in paragraph 18 above, which is incorporated herein by reference.

Application'808 claims do not recite that the τ -form metal-free phthalocyanine recited in the reference claims has the X-ray diffraction pattern recited in the instant claims. However, Kakuta discloses a τ -form metal-free phthalocyanine that appears to have a X-ray diffraction pattern as recited in the instant claims. The discussion of Kakuta in paragraph 8, supra, is incorporated herein by reference.

It would have been obvious for a person having ordinary skill in the art to use Kakuta's τ -form metal-free phthalocyanine pigment as the metal-free phthalocyanine in the photoreceptor rendered obvious over the subject matter recited in Application'808 combined with teachings of JP'250, and to use the resulting photoreceptor in Kanoto's detachable process cartridge in his image forming apparatus, because that person would have had reasonable expectation of successfully obtaining a photoreceptor having improved sensitivity to the longer wavelength region, thereby providing an electrophoto-graphic imaging apparatus comprising an easily detachable process cartridge and a reversal development imaging method that provide good toner images as taught by JP'250.

21. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Janis L. Dote whose telephone number is (703) 308-3625. The examiner can normally be reached Monday through Friday.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Mark Huff, can be reached on (703) 308-2464. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9311 (Rightfax) for after final faxes, and (703) 872-9310 for other official faxes.

Any inquiry of papers not received regarding this communication or earlier communications, or of a general nature or relating to the status of this application or proceeding should be directed should be directed to the Customer Service Center of Technology Center 1700 whose telephone number is (703) 306-5665.

Janis L. Dote
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PRIMARY EXAMINER
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JLD
November 27, 2002